Data collection procedures of Agronomic crops

Mirza Hasanuzzaman
Lecturer, Department of Agronomy
Sher-e-Bangla Agricultural University

Sampling
Methods of selecting a sample are called sampling.

Sampling may be of following types:
1. Simple Random Sampling
2. Stratified random sampling
3. Purposive sampling
4. Systematic sampling
5. Cluster sampling
6. Multistage sampling
7. Double sampling
8. Area sampling
9. Quota sampling
10. Mixed sampling

Sample
A sample is a small represented part of a population. For example, in order to investigate the plant height of a crop, some plants are selected to collected necessary data. These plants are a sample.

Sample size
The number of elements selected for a sample is known as the sample size. A sample of size less than 30 is termed as a small sample and that having 30 or more elements is termed as a large sample. Statistic changes with sample size.

Objectives of sampling
1. Sampling is more useful for taking timely and quick decision
2. It save money
3. It ensure the accuracy of results
4. It represent population if can be properly done.
5. It creates a greater scope.
6. Large population problems can be avoided
Data collection for Agronomic Research

Meteorological data
- Latitude and altitude of the location of the study
- Daily meteorological parameters
  - Solar radiation
  - Rainfall
  - Maximum and minimum temperature
  - Sunshine hours
  - Wind speed
  - Relative humidity

Crop data
- Phonological observation: Date of sowing, emergence, floral initiation, anthesis, physiological maturity.
- Agronomic observations: The agronomic observations to be recorded at all the phonological stages of crop include plant population, number of leaves/plant, maximum leaf area of individual leaf, LAI, diurnal leaf water potential, diurnal leaf temperature, PAR, plant height, leaf weight, culm weight, dry matter, head/ear weight, grain weight, etc.
- Final grain yield and yield components.

Soil data
Soil type, soil depth, structure, texture, water holding capacity, soil profile structure, bulk density, salinity, alkalinity, pH, EC, microbial content, soil fertility, soil productivity, available soil moisture, wilting point, permanent wilting point and available moisture at different stages of crop.

Management data
Amount of irrigation, fertilizer quantity, herbicide quantity, date and mode of application, insecticide quantity and date of application, etc.

Biometric observations in field crops
It is important to collect data on various growth and yield parameters which may facilitate to interpret the results in a better way. Generally growth parameters such as plant, height, tiller production, leaf area index and dry matter production are recorded. In addition, yield parameters may also be recorded. The growth and yield parameters may be recorded at different growth stages viz. tillering, primodial initiation, flowering and at harvest. Observations can also be taken at 20, 40, 60, 80 and 100 days after planting or sowing. Appropriate method of sampling and proper measurement are important to get a valid data. The growth and yield parameters that should be recorded for important field crops are given below:
Data collection procedures of different crops and parameters

Rice
1. Plant height
2. Leaf area index (LAI)
3. Tiller production
4. Dry matter production
5. Number of panicles/m²
6. Number of spikelets/panicle
7. Filled grain %
8. Test grain weight
9. Grain yield
10. Straw yield

Wheat
1. Plant height
2. Leaf area index (LAI)
3. Tillers/m row length
4. Effective tillers/m row length
5. Number of spikelets/panicle
6. Number of grains/panicle
7. Test grain weight
8. Grain yield
9. Straw yield

Maize
1. Cobs/plant
2. Cob weight
3. Grains/cob
4. Test grain weight
5. Grain yield
6. Stover yield

Millets
1. Number of effective tillers/hill
2. Spikes/panicles
3. 1000 grain weight
4. Grain yield
5. Straw yield

Pulses
1. Number of pods/plant
2. Number of grains/pod
3. Weight of pods/plant
4. Test grain weight
5. Grain yield
Data collection procedures of different crops and parameters

Groundnut
1. Number of pods/plant
2. Mature pods/plant
3. Immature pods/plant
4. Pod weight/plant
5. 1000 kernel weight
6. Pod yield
7. Haulm yield

Rapeseed-mustard
1. Plant height
2. Number of branches/plant
   - Primary
   - Secondary
   - Tertiary
3. Numbers of siliquae/plant
4. Number of seeds/siliquae
5. 1000 seed weight
6. Seed yield
7. Stover yield

Sunflower
1. Head diameter
2. Seed weight/plant
3. 100 seed weight/plant
4. Seed yield

Soybean
1. No. of branches/plant
2. Number of pods/plant
3. Pod weight/plant
4. Number of seeds/pod
5. 100 seed weight
6. Seed yield

Sesame
1. Plant height
2. Branches/plant
3. Capsules/plant
4. Length of capsule
5. Seeds/capsule
6. Test weight of seed
7. Grain weight/plant
8. Grain yield
Data collection procedures of different crops and parameters

Jute
1. Plant population/m²*
2. Plant height*
3. No. of branches/plant*
4. Number of leaves*
5. Leaf area*
6. Diameter of stem*
7. Fibre yield*
8. Stick yield*
9. Total capsules/plant**
10. Diameter of capsule**
11. Seeds/capsule**
12. Test weight of seed**
13. Seed yield**
---------------------------
*data for fibre purpose
** data for seed purpose

Cotton
1. Number of monopidials and sympodials
2. Number of bolls/plant
3. Seed cotton weight/boll
4. Seed cotton yield
5. Lint yield

Sugarcane
1. Length of malleable cane
2. Number of internodes/cane
3. Diameter of the cane
4. Cane weight
5. Number of malleable canes/m²
6. Cane yield

Tobacco
1. Total cured leaf yield
2. First grade leaf
3. Leaf yield

Forages
- Green forage yield

Green manures
- Biomass production/unit area